mystery science

Grades K-5
Mini-Lesson: “What is the Moon made of?”

VIDEO TRANSCRIPT

Hi, it's Doug! The Moon—so easy to get used to the Moon that you forget that it's there! But, have you ever looked closely at the Moon? It's full of interesting details. This is one of my favorite things. Now I'm sure you've seen a globe of the Earth. This is a globe of the Moon. You can hold it in your hands and you can see all the interesting details on the Moon. All those dark spots—all the little craters, every single one of them has a name.

Someone named Hozhaia has a question about the Moon. Let's give him a call now.

[Video Call]
- Hi, Doug!
- Hi, Hozhaia!
- I have a question for you. What is the Moon made of?
- That's a great question.

If you were to look at the Earth from space, you can see the Earth is made of different things: water, green plants, clouds, mountains made of rock—many different materials. What about the Moon, though? Well, let's have a look at it. What do you notice? Do you see any clues that might tell you what the Moon is made of?

Now would be a good time to pause the video and discuss.

Okay. You ready?

Well, before there were telescopes, and long before astronauts traveled into space, this is the only view of the Moon people had—just looking up at it in the sky. People noticed that the Moon is mostly white, except for these dark spots. Have you ever noticed those?

People even made up stories about those dark spots, like some people thought it looked like a face. People call that the Man in the Moon. Or, other people thought it looked more like a rabbit. You can kind of see that.

People wondered what these dark spots might be made of. One guess is that they're made of water—like, maybe they're oceans. So, they gave the dark spots names based on the idea that they might be water. Like this one here, they called it the Ocean of Storms. And this one, they called it the Sea of Tranquility. But eventually, the telescope was invented.

By looking at the Moon through a telescope, people could see more details than ever before. They were amazed to find things that look similar to what we see on Earth—mountains, hills—they didn't see any water. All those dark areas weren't actually oceans but were maybe some kind of flat plains.

It was still a mystery what exactly the surface of the Moon was made of. But eventually, we invented rockets and had the ability to send people to the Moon. When the astronauts first landed on the Moon, the mystery was solved once and for all. The Moon is made of rock. Astronauts brought back some of the rocks that they found.

The reason so much of the Moon is white is because it's made of a light-colored rock—a type of rock called granite. You might have heard of it because we have a lot of granite here on Earth, too. It's often found in mountains.

Now, here on Earth, granite isn't always white. Sometimes it's more of a light pink color or a light orange. People sometimes use it for kitchen countertops in their homes. So, if you ever see a kitchen counter that looks like this, it's granite—the same kind of rock found in the white parts of the Moon. But what about those dark spots on the Moon—the parts that people used to think were oceans—what kind of rock are they made of?

Well, the very first mission to the Moon, the astronauts landed in this dark spot right here, the Sea of Tranquility, and they brought back some of the rock. Here's what it looks like. So, you can see the dark spots are dark-colored because they're made of dark-colored rock. It's called basalt, and it's also a rock that can be found on Earth. But on Earth, it's only found in places where there are volcanoes. It's a type of lava rock. You might know that lava is actually melted rock. It's rock that's so hot that it's a liquid. As the lava cools off, it becomes solid dark-colored lava rock. That's what basalt is. Now think about that. That means that if you could go way, way back in time, and look up at the Moon in the night sky, it might've looked like this—glowing orange.

Those dark spots we see on the Moon weren't oceans of water, they were oceans of lava. Over time, that lava cooled off into dark-colored rock, creating the dark spots we see on the Moon today. Scientists aren't sure why there were once oceans of lava on the Moon. They're still trying to figure that out.

But recently, scientists in Japan discovered a cave on the Moon that they think was formed in that ocean of lava. They're thinking about one day setting up some kind of camp or city inside that cave where people can live. Maybe you'll be one of the astronauts who visit the Moon someday.

So, in summary, people have always wondered what the Moon is made of. For a long time, they thought the dark spots might be oceans. Astronauts brought back rocks from the Moon, and now we know that the white parts of the Moon are made of light-colored granite, which explains why it looks white, and the dark spots are made of dark-colored lava rock, which explains why those spots look dark. Because it's lava rock, those dark spots must have once been giant oceans of lava which became solid rock as they cooled.

That's all for this week's question. Thanks, Hozhaia, for asking it!